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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,840	03/29/2006	Masaki Yoda	1000023-000104	5189
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EXAMINER				
NGUYEN, VU ANH				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/573,840

Applicant(s)

YODA ET AL.

Examiner

Vu Nguyen

Art Unit

4171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/86)
Paper No(s)/Mail Date 03/29/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-5 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Toyoda (JP 2003/183453 A) as applied to claims 1-3 and 5, and further in view of Zou et al. (WO 01/90262) as applied to claim 4.

Regarding claims 1, 2, and 3:

5. Claim 1 recites an additive for printing ink comprising a polyethylene wax that is (i) a homopolymer or a copolymer of ethylene with an α -olefin having 3-20 carbons, and has (ii) an intrinsic viscosity of 0.06-0.35 dl/g at 135°C, (iii) an M_w/M_n in the range of 1.7-3.2, (iv) an M_z/M_w in the range of 1.5-2.0, (v) a density of 920-980 kg/m³, (vi) a penetration hardness of 5 dmm or less, and (vii) an acid value of 0.3-9.9 KOH-mg/g.

Claim 2 recites the polyethylene wax to be obtained by oxidative modification of the corresponding polymer produced with a metallocene catalyst. Claim 3 recites a solvent dispersion of the wax for use in printing ink where the wax particles are 0.3-10 μ m in diameter and the amounts of these particles in a non-aromatic solvent are 5-50 wt%.

6. Toyoda teaches an additive for printing ink (claim 8) comprising a polyethylene wax that is (i) a homopolymer of copolymer of ethylene with an α -olefin having 3 or more carbon atoms ([0008] & [0009]), and has (ii) an intrinsic viscosity of 0.11-0.17 dl/g ([0.166] & [0.167]), (iii) an M_n in the range of 2000-5000 ([0009]), (iv) an M_w/M_n of 2.9 or less ([0010]), (v) a density of 850-980 kg/m³, and (vi) an acid value of 30-100 KOH-mg/g (claim 1). It is further disclosed that the polyethylene wax is synthesized using metallocene catalyst and is subject to oxidative modification (claims 2-3). Toyoda also teaches a solvent dispersion of the disclosed wax in hydrocarbon solvent (claim 7) where the wax particles have average diameter of 0.1-20 μ m (claim 4) and their proportions in the solvent are 0.1-10 wt% ([0134]).

7. Clearly, the disclosure has all the limitations set forth in the present invention, except that the disclosure fails to teach an M_z/M_w value and a penetration hardness

value of the wax and that the disclosed acid value is 30-100 KOH-mg/g while the claimed value is 0.3-9.9 KOH-mg/g. With regard to the M_z/M_w value of 1.5-2.0 being claimed, it is reasonable to expect that the disclosed polyethylene wax has similar value because (1) the claimed M_w/M_n value and the disclosed M_w/M_n value are similar, and (2) the M_z/M_w value only diverges significantly from the M_w/M_n value when the molecular weight is quite large, yet the number-average molecular weight of the disclosed wax is only 2000-5000. Similarly, a penetration hardness value of 5 dmm or less is inherent in the property of the disclosed wax because, according to the JIS K2207 method, the penetration hardness is a function of viscosity and density. Since the claimed wax and the disclosed wax are similar in composition, viscosity, and density, the penetration value of the disclosed wax is expected to be 5 dmm or less. Regarding the discrepancy in the acid values, the following *KSR rationales* are invoked:

- Applying a known technique to a known device ready for improvement to yield predictable results; and

- "Obvious to try"—Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

The disclosed wax is used as additive for printing ink to provide abrasion resistance ([0119]) and water resistance ([0113]). The disclosed oxidation-modified wax, due to its high acid value, has moderate water dispersibility ([0113]). However, it is obvious to one skilled in the art that the high acid value jeopardizes the water-resistance property of the wax. Consequently, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to employ the oxidative modification method

taught by Toyoda to modify the disclosed wax so that it has a low acid value in order to improve the water-resistance and abrasion-resistance of an ink that uses the wax as an additive. Lowering the acid value will result in one negative property, which is a lower dispersibility of the wax in a polar solvent. However, such a drawback can be easily overcome by using a more non-polar solvent system.

8. Claim 5 recites a printing ink that uses the claimed wax particles having average diameter of 0.3-10 μm and a weight ratio of 0.1-10% in a solvent that has less than 5 wt% of an aromatic content. Toyoda teaches that the disclosed polyethylene wax is used as additive for printing ink, and when it is used as such, it is in the form of particles having an average diameter of 0.1-20 μm (claim 4) and the proportion of the particles in a solvent is 0.1-10 wt% ([0134]). Further, the hydrocarbon solvent is disclosed to be selected at the discretion of the user, and that the solvent includes aromatic and non-aromatic compounds ([0131]). Although Toyoda fails to specifically teach a printing ink, it is obvious that one can readily use the disclosed wax to prepare a printing ink without further experimentation because all the essential elements, including suggestions for ink preparations ([0131]-[0136]), are taught. Further, "the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977)" (See MPEP § 2112 [R-3]). As pertaining to the amount of the aromatic solvent, the disclosure recommends solvents that include toluene, xylene, methyl isobutyl ketone, isopropyl alcohol, and others ([0131]). It is well known in the art of printing ink that the choice of solvents depends on the ink type. In fact, Toyoda

teaches that when the disclosed wax is used in offset ink, the solvents should be high-boiling-point n-decane and gas oil ([0131]). In addition, under *KSR rationale*—known work in one field of endeavor may prompt variations of its use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art, it would have been obvious to one skilled in the art to minimize the use of aromatic solvents since these solvents are well known to be harmful to health and environment and subject to regulations and restrictions.

Regarding claim 4:

9. The applicants claim a solvent dispersion for a printing ink according to claim 3 where the solvent contains no aromatic compound but comprises an alcohol and an ester at a ratio of 10 wt% or more. Toyoda discloses a solvent dispersion of a polyethylene wax in hydrocarbon solvent for use in printing ink as discussed above but fails to specify a solvent as claimed.

10. Zou et al. teaches a solvent-based ink composition comprising a solvent made of 1-methoxy-2-propanol and methyl acetate at a weight ratio of 79.9:5.0 (page 9, lines 27-28). In other words, the solvent comprises an alcohol and an ester at a weight ratio of 16%. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the solvent system taught by Zou et al. in the dispersion taught by Toyoda for preparation of ink composition due to the following reasons: both disclosures are related to dispersion for ink composition, and Zou et al. teaches that the disclosed solvent system provides appropriate evaporation rate and solvency for improvement of ink performance (page 4, lines 1-26; page 3, lines 20-31).

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 2-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Claim 2 recites "[t]he additive for a printing ink according to claim 1, wherein a polyethylene-based wax is obtained by oxidative modification of the polyethylene-based wax..." It is not clear which wax this oxidation-modified PE wax is referred to. If it is not the same species recited in claim 1, does it imply that the wax in claim 1 is an unmodified PE wax? And if that is the case, then the acid value in claim 1 makes it the more confusing.

14. Claims 3-5 all involve weight ratios. However, it is not clearly specified what composition or totality these ratios are calculated with respect to.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 4171

Vu Nguyen
Examiner
Art Unit 4171

/V. N./